REMARKS

Disposition of Claims

Upon entry of the foregoing amendments, claims 1-2 and 7-8 will remain pending in the application and stand ready for further action on the merits. Claim 1 has been amended herein to recite that the over-molding of the thermally conductive filled polymer composition around the tubular pipe produces a base plate, and the base plate is provided with separate heat-dissipating pin members. This amendment is fully supported by the specification particularly at paragraph 20, lines 11-16. No new matter has been added to the application. Claims 2 and 7-8 are dependent on amended claim 1. Claims 3-6 and 9-14 have been canceled without prejudice or disclaimer of the subject matter contained therein.

Rejections Under 35 U.S.C. §112

The Office Action states that claims 1-2, 5, and 7-8 are rejected under 35 U.S.C. §112, first paragraph, because of the recited term, "thermally conductive filled polymer composition." The Office Action alleges that there is no support for this term in the specification. In reply, Applicant submits that this term is fully supported by the specification and no new matter has been added. Particularly, the specification refers to a thermally conductive material such as a "filled polymer composite material" at paragraph 11, lines 4-5. The Office Action further alleges that the term, "filled polymer composite material" is indefinite, because the meaning of "filled" is unclear. Applicant respectfully submits that a "filled polymer composition" is a term commonly used in the art to describe a composite comprising a mixture of polymer and filler material.

For example, U.S. Patent 6,207,775 describes a process for making a filled polymer composite comprising an interpolymer and filler particles; U.S. Patent 6,172,139 describes a method for making a filled polymer matrix composite film comprising a fluoropolymer and dispersed particulate fillers; and U.S. Patent 5,973,049 describes a filled polymer composition comprising certain thermoplastic interpolymers and one or more inorganic fillers.

The filled polymer compositions used in the method of this invention may contain various filler materials as is known in the art. Fillers are defined conventionally as "an inert mineral powder of rather high specific gravity (2.00-4.50) used in plastic products and rubber mix to provide a certain degree of stiffness and hardness and to decrease cost." *Hawley's* Condensed Chemical Dictionary, 13th Ed. (1997).

In view of the foregoing, it is respectfully requested that the rejection of claims 1-2, and 7-8 under 35 U.S.C. §112 be withdrawn.

Rejections Under 35 U.S.C. §103(a)

The Office Action states that claims 1-2, 4, and 7-8 are rejected under 35 U.S.C.§103(a) as being unpatentable in view of Mashiko et al., U.S. Patent 6,253,829 ("Mashiko"). Applicants submit that the present invention, as recited in amended claims 1-2 and 7-8, is patentable over Mashiko for the reasons discussed below.

Applicants agree with Examiner that Mashiko discloses a process for manufacturing a heat sink having heat-radiation fins. In the Mashiko process, a molten metal such as copper, aluminum, magnesium, or a metal alloy is poured into a die-casting cavity having protruding heat-radiation fins. When the molten metal in the cavity solidifies, the base is molded integrally with the radiation fins. (col. 2, lines 36-42). The die-casting cavity may contain a heat pipe to provide a "construction in which the heat pipe is mounted in the base integrated with the fins." (col. 2, lines 63-67). As the Examiner points out, Mashiko discloses that the container 91 is not sealed during the casting of the molten metal. The container 91 is changed into a heat pipe by pouring water, acting as the working fluid, into the container 91 through an injection nozzle 95. Then, the injection nozzle 91 is sealed-up. (col. 16, lines 5-30).

However, in the Mashiko die-casting process, the objective is to make an integrated heat-sink assembly having a base plate molded integrally with radiation fins having a large surface. The base may contain a heat pipe which is surrounded by the cast metal. Referring to FIG. 28, Mashiko describes this casting process:

> From this state, the plunger 14 is moved in the direction of arrow of FIG. 28 to apply the pressure to the molten metal 13. Then, all the area of the outer circumference of the container 91 and the root of the injection nozzle 95 are wetted by the molten metal. Moreover, the lower edges of the individual fins 8 are confined by the molten metal 13. This state is left as it is for a predetermined time period to solidify the molten metal 13. Thus, the container 91 and the lower edges of the individual fins 8 are cast integrally with the base 7 of Al or its alloy so that these three components are jointed to one another.
> (col. 15, lines 61-67 and col. 16, lines 1-4, emphasis added).

Mashiko also shows a die-casting process in FIG. 29, where slits are used to form the fins:

> The container 91 for the heat pipe is arranged in the cavity 102, and the molten metal is poured. As a result, the container 91 is cast with the molten metal 13 for the base. Simultaneously with this, the molten metal 13 steals into the slits 101 and solidifies therein to form the fins. (col. 16, lines 66-67 and col. 17, lines 1-3).

In contrast to the teachings in Mashiko, Applicant's method, as recited in amended claim 1, includes providing separate heat-dissipating pin members on the base plate. Thus, in Applicant's method, a single mold containing integrated sections for the base plate and pins is not used, and the resulting heat pipe construction is not a unitary, molded structure. Rather, the heat-dissipating pins and base plate are separate members. The pins are distinct heat-dissipating elements that are mounted to the base plate.

Mashiko does not provide any suggestions or hints for a method of making such a heat pipe construction. As discussed above, the entire essence of Mashiko is to an integrated heat-sink assembly including a base plate and heat-radiation fins made by casting molten metal in a die-casting cavity. There is no disclosure or suggestion in Mashiko for a method that involves mounting separate heat-radiation fins to the base

plate. Thus, a person of ordinary skill in the art looking at the disclosure in Mashiko would have no basis for modifying the disclosure therein to produce the presently claimed invention.

As discussed above, Applicant believes that claim 1 (as amended) is in condition for allowance. Claims 2 and 7-8 are dependent on amended claim 1; thus, Applicant submits that these claims also are in condition for allowance. In view of the foregoing, it is respectfully requested that the rejections of claims 1-2 and 7-8 (as amended) under 35 U.S.C. §103(a) be withdrawn.

Conclusion

In summary, Applicant submits that claims 1-2 and 7-8 (as amended) are patentable and each of the Examiner's rejections and objections has been overcome. Accordingly, Applicants respectfully request favorable consideration and allowance of amended claims 1-2 and 7-8.

The Commissioner is hereby authorized to charge any additional fee required in connection with the filing of this paper or credit any overpayment to Deposit Account 02-0900. Should there be any outstanding matter that needs to be resolved in the present application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Respectfully submitted,
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